



**ULB-35 RVI  
LED LIGHT SOURCE**

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**MIDORI™**

OPERATING MANUAL

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## PREFACE







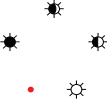








Thank you for purchasing the Midori™ fiber optic illuminator which utilizes state-of-the-art solid-state illumination technology. The light source is a high output, efficient, compact and lightweight fiber optic light source for industrial applications where space is a premium. The ULB-35 series fiber illuminators utilize eco-friendly solid state LED lighting technology, exhibits instant-on and electronic intensity dimming capability with long operating lifetime. The Midori ULB-35 LED fiber illuminator is equipped with an ACMI fiber receptacle with separate Storz and Olympus style screw-in adapters available to accommodate these other common fiber cable types. The ULB-35 accepts 12V DC input voltage for portable battery operation as well. Please read this operating manual in its entirety before using this product.

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# INTRODUCTION

## 1.1 SYSTEM SYMBOL DESCRIPTIONS

	Caution: Consult Accompanying Documentation		Caution: Hot Surface
	Caution		Hazard Warning
	Lamp On		Lamp Off
	Light; Lighting; Illumination Intensity		UV Light Warning
	Storage Humidity		Transport Temperature
	Alternating Current		Direct Current
	Manufacturer		Do Not Immerse in Any Liquid
	Do not dispose of this product as unsorted municipal waste. Prepare this product for reuse or separate collection as specified by Directive 2002/96/EC of the European Parliament and the Council of the European Union on Waste Electronic and Electrical Equipment (WEEE). If this product is contaminated, this directive does not apply.		

## 1.2 WARNINGS AND PRECAUTIONS / MISES EN GARDE ET PRÉCAUTIONS

	<p>WARNING / MISE EN GARDE</p>	<p>There are no user serviceable or replacement parts. Do not attempt to dismantle box or remove top cover. / Aucune pièce ne peut être réparée ou remplacée par l'utilisateur. Ne pas essayer de démonter la boîte ou de retirer le couvercle du dessus.</p>
	<p>WARNING / MISE EN GARDE</p>	<p>Only qualified personnel should make electrical inspections and repair of the LED Light Source. / Seul le personnel qualifié doit effectuer les vérifications électriques et les réparations de cette source de lumière à DEL.</p>
	<p>WARNING / MISE EN GARDE</p>	<p>UV light is emitted from this product, Avoid eye and skin exposure to unshielded product. High intensity light at the front of the LED Light Source and at the tip of the fiber-optic bundle will create high temperatures and UV light. To minimize the risk of injury, avoid direct viewing or contact. / L'ultraviolet (UV) est émis par ce produit. Evitez le contact avec les yeux ou la peau. La lampe à haute intensité, située sur le devant de la source de lumière à DEL et sur le bout du faisceau de fibres optiques, va générer beaucoup de chaleur et une lumière vive. Afin de réduire les risques de blessures, évitez de toucher l'appareil ou d'exposer directement l'oeil à la lumière de la lampe."</p>
	<p>WARNING / MISE EN GARDE</p>	<p>To prevent temporary blinding and contact with heated parts, always plug the fiber optic bundle into the LED Light Source before turning the power on. / Pour éviter tout aveuglement temporaire ou contact avec les pièces chauffées, toujours brancher le faisceau de fibres optiques dans la source de lumière à DEL avant la mise en marche.</p>
	<p>WARNING / MISE EN GARDE</p>	<p>Do not use the LED Light Source directly in medical applications. / Ne pas utiliser une source de lumière à DEL directe à des fins médicales.</p>
	<p>WARNING / MISE EN GARDE</p>	<p>Unit MAY BE HOT. Allow to cool before handling. / L'appareil PEUT ÊTRE CHAUD. Il est important de le laisser refroidir avant d'y toucher.</p>

	<p>CAUTION / AVERTISSEMENT</p>	<p>Preferred operation is in the horizontal position. Other operating orientations are permitted. / L'appareil fonctionne de façon optimale à l'horizontale. Les autres orientations sont permises.</p>
	<p>CAUTION / AVERTISSEMENT</p>	<p>Any changes or modifications made to this device that are not expressly approved by manufacturer may void the user's authority to operate the equipment. / Toute modification apportée à cet appareil et non expressément approuvée par le fabricant peut priver l'utilisateur de son droit d'usage.</p>
	<p>CAUTION / AVERTISSEMENT</p>	<p>PROVIDE ADEQUATE VENTILATION TO PREVENT OVER HEATING. Do not drape this light source. Provide a 1.5 inch (3.8 cm) distance between LED Light Source and any solid objects. / ASSURER UNE VENTILATION ADÉQUATE AFIN D'ÉVITER LA SURCHAUFFE DE L'APPAREIL. Ne pas couvrir la source de lumière. Laisser au moins 3,8 cm (1,5 po) de distance entre la source de lumière à DEL et tout objet.</p>
	<p>CAUTION / AVERTISSEMENT</p>	<p>DO NOT IMMERSE or store liquids above or on the LED Light Source. / NE PAS IMMERGER la source de lumière à DEL dans des liquides ou placer des liquides audessus de celle-ci.</p>
	<p>CAUTION / AVERTISSEMENT</p>	<p>Do not operate device without the cover in place. / Ne pas faire fonctionner l'appareil sans son couvercle.</p>
	<p>CAUTION / AVERTISSEMENT</p>	<p>DO NOT obstruct the airway paths for sufficient cooling is required. / NE PAS obstruer les voies d'aération afin de permettre le refroidissement adéquat de l'appareil.</p>
	<p>CAUTION / AVERTISSEMENT</p>	<p>Please read this entire manual prior to operation. / Lire le présent guide en entier avant d'utiliser l'appareil.</p>
	<p>CAUTION / AVERTISSEMENT</p>	<p>Protection provided by the equipment maybe impaired if not used in accordance with the manufacture recommendations. / La protection assurée par l'équipement risque d'être altérée si l'appareil n'est pas utilisé conformément aux recommandations du fabricant.</p>

# SYSTEM DESCRIPTION AND OPERATION

## 2.1 SYSTEM DESCRIPTIONS

1. The light source power switch should be in the OFF position. Plug the external 12vdc power supply into the 12vdc connector. Refer to figure 1.
2. Plug the external power supply cord into AC receptacle main power.
3. Plug the fiber-optic bundle into the light port and connect the opposite end to the equipment being used. Refer to figure 2.
4. Turn the power switch to the ON position. LED indicator light will turn on when light source is powered. Refer to figure 3.
5. Adjust the intensity control to set the light intensity to the desired light output level. Refer to figure 3.
6. Turn unit OFF when not in use. Refer to figure 3.
7. This unit is equipped with a fiber sense interlock feature. The device will not emit light unless fiber cable is completely inserted into the front adapter. Please ensure fiber cable is fully seated into receptacle.

Figure 1. Back View

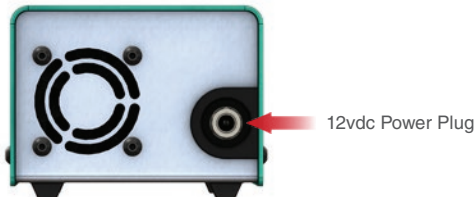


Figure 2. Fiber-Optic Bundle

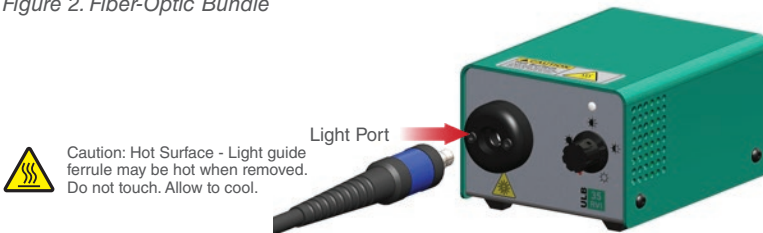
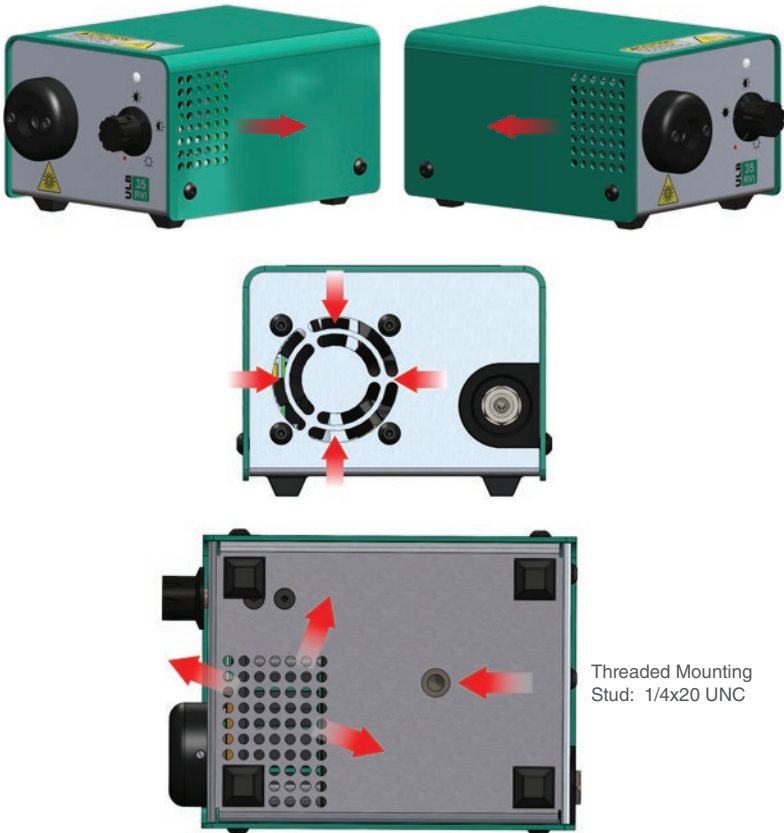


Figure 3. Front View



Figure 4. Cooling and Air Flow Paths

1. Do not obstruct air flow paths. This device is designed to have proper forced air cooling paths to maintain thermal stable operation.
2. Place in an area that provides adequate ventilation to prevent unit from overheating. Do not drape the LED Light Source with cloth or objects restricting airflow.
3. Airflow outlets are shown in below red arrow graphics.
4. 1/4-20 UNC mounting stud located in the middle of box bottom side.



## 2.2 SPECIFICATIONS

### Dimensions


Length:	127mm (5.0")
Width:	90mm (3.5")
Height:	68mm (2.7")
Weight:	0.45 kg (1.0 lb)

### Illumination Source

Type:	LED Custom Module
UV Wavelength:	365 - 370nm Peak
Power:	50 Watts
Average LED Life*:	10,000+ Hours

### Electrical

#### External Power Supply Ratings:

Input:	100 - 240V~, 50/60 Hz, 1.4A max
Output:	+12V  , 5.0A
Recommended PS:	UAI Part: UPS-00

#### ULB-35 Power Ratings:

Voltage:	+12V DC; 14V DC max
Current:	5.0 amp

Battery:	Ushio America, Inc. recommends using an UR (or other recognized testing laboratory) recognized battery rated at 12V/8Ah or equivalent with a minimum 5.0 amp current limit rating.
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\* Based on LED manufacturer rated wattage and thermal operation.



## Mechanical Dimensions



### Environment

Operating Temperature:	41° F to 104° F (5° C to 40° C)
Humidity:	0 to 95% rh (Non-Condensing)
Storage Temperature:	-10° F to 140° F (-20° C to 60° C)
Humidity:	30 to 75% rh
Atmospheric Pressure:	700 hpa to 1060 hpa
Mode of Operation:	Continuous
Safety System Classification:	Class II
System Pollution Degree:	2
Installation Category:	II

## 2.3 PRODUCT ORDERING INFORMATION

Order Code	Product ID	Description
1004232	ULB-35rvi	35W RVI UV LED Light Source, ACMI
1004233	ULB-35rvi	35W RVI UV LED Light Source, Machida
1003879	UPS-00	Universal Input Power Supply
1003881	UPC-US	US Power Cord; EN60320-C7
1003880	UPC-EU	EU Power Cord EN60320-C7
1003882	UPC-UK	UK Power Cord EN60320-C7
1004095	UPC-AU	AU Power Cord; EN60320-C7
50159	50159	Storz Fiber Adapter; Screw-In
50160	50160	Olympus Fiber Adapter; Screw-In
5002496	UAC-01	Portable Light Case
5002493	UPS-03	12vdc LiP Battery Pack

## CARE AND MAINTENANCE



1. Turn the LED Light Source off and unplug the power cord from both the wall outlet and the rear of the unit.
2. Wipe the external surfaces clean with a cloth dampened with mild soap and water. **DO NOT IMMERSE.**
3. Wipe the power cords clean with a cloth dampened with mild soap and water. **DO NOT IMMERSE. DO NOT RECONNECT WET.**
4. **DO NOT** plug the power source into a wall outlet until it is thoroughly dry.
5. It is recommended to periodically clean the reflective optical surface near the LED. Please use a soft cotton Q-tip dipped in Isopropyl Alcohol and wipe the reflective optic surfaces and allow to thoroughly dry prior to use.

# TROUBLESHOOTING

In the event the unit stops functioning, try the following steps to operate light source. The power supply exhibits internal protection circuitry for user safety precautions and will shutdown during certain instances. This equipment has been tested to ESD conditions according IEC 61326-1 and performs to performance criterion C. This means, that under certain conditions the overvoltage protection of the power supply may turn the power supply output and the unit off to prevent damage to the unit. In such case the power supply must be disconnected from main power to reset this fault condition. In the event the unit suddenly turns off, turn the unit off. Unplug the power supply from mains voltage (120V/ 230V). Wait ~5 seconds and plug the power supply back into mains voltage. Turn the unit on.

1. Turn OFF light source by rotating intensity control knob counterclockwise until the switch clicks off.
2. Completely disconnect power supply from both light source and mains (power plug into ac outlet).
3. Wait for ~5 seconds until power supply discharges as observed on the power supply LED indicator will turn off.
4. Reconnect power supply to both AC to main voltage and DC connector to light source.
5. Turn ON light source by rotating knob clockwise until clicks on and LED indicator light is on.
6. Insert fiber cable completely to deactivate fiber sense interlock feature.
7. Rotate knob to increase light output intensity to desired output.

## Repair

For repair information, please contact Customer Service at:

Tel:	+1.714.236.8600
Customer Service:	customerservice@ushio.com

## LIMITED WARRANTY

Ushio America, Inc. warrants the LED Light Source, when new, to be free of defects in material and workmanship and to perform in accordance with the manufacturer's specifications when subject to normal use and service for a period of one year from the date of purchase from Ushio America or an authorized agent. Ushio America will either repair or replace any components found to be defective or at variance from the manufacturer's specifications within this time at no cost to the customer. It shall be the purchaser's responsibility to return the instrument to the authorized distributor, agent, or service representative.

This limited warranty does not cover the breakage or failure due to tampering, misuse, neglect, accidents, improper installation, modification, shipping, or to improper maintenance, service, and cleaning procedures. This limited warranty is also void if the instrument is not used in accordance with the manufacturer's recommendations or if required service is performed by anyone other than Ushio America or an authorized agent. The purchase date determines limited warranty requirements. No other express or implied limited warranty is given.

# AGENCY APPROVALS



The CE mark on this product indicates that it has been tested to and conforms to the provisions noted within the following directives:

General Product Safety Directive: 2001/95/EC

EMC: 2014/30/EU

RoHS 3: 2015/863/EU

In accordance with the following standards:

EN61010-1

IEC 61326-1

EN 61326-1

IEC 62471

IEC/EN 61000 3-2

IEC/EN 61000 3-3

EN 50581

IEC/EN 62471:2006 LED Photobiological safety lamp standard, categorized as Risk Group 3 (High-Risk).



The UKCA mark on this product indicates that it has been tested to and conforms to the provisions noted within the following directives:

Electromagnetic Compatibility Regulations 2016

General Product Safety Regulations 2005

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012



Conforms to UL Std 61010-1

Certified to CSA Std C22.2 No. 61010-1



WEEE

([www.lamprecycle.org](http://www.lamprecycle.org))

# AGENCY COMPLIANCE STATEMENTS

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## FCC Class A Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.



### CAUTION

Any changes or modifications made to this device that are not expressly approved may void the user's authority to operate the equipment.

### NOTE

To maintain compliance with FCC Rules and Regulations, cables connected to this device must be shielded cables, in which the cable shield wire(s) have been grounded (tied) to the connector shell.

## Canadian Notice

This equipment does not exceed the Class A limits for radio noise emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

# MANUFACTURE CONTACT INFORMATION

Manufactured and Serviced by:

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5440 Cerritos Ave.  
Cypress, CA 90630 USA



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Toll-Free:

+1.800.838.7446

Customer Service:

customerservice@ushio.com

Website:

www.ushio.com

Model or Type:

ULB-35rvi



**Made in USA**

# USHIO

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Form No. ULB35rvi/1021